Bandolier 128

Independent evidence-based thinking about health care

Electronic Bandolier

2004 has seen a surge in traffic to the Bandolier Internet site. The approximate annual doubling in traffic has accelerated, and over the last few weeks traffic approached, then exceeded, the figure of 1,000,000 visits in a week. Included were almost 100,000 PDF downloads in a week.

Total traffic will be much more than this. Bandolier exists on a number of Intranets, for instance. In addition, many Bandolier pages are cached on university and medical school websites, and on most of the main search engines. The result is that our measured traffic is likely to be only a fraction of the total readership, and therefore impact.

No free lunches

Electronic Bandolier is free to users: any user, anywhere on the planet, can access our pages free of charge. But electronic Bandolier is not free to produce. We are immensely grateful to the Oxford University Medical School Information Management Services unit for making space on its servers, and the bandwidth, to support the site. Charities, industry, and government have helped through no-strings sponsorship to provide the resources to develop particular parts of the site.

Someone pays

It is inevitable that Internet users will have to make a contribution to resource Bandolier, as do journal subscribers. How and when this will happen is not clear, but happen it must. Bandolier may be free, but it doesn't get into the sky without cost. Someone has to pay, and over the next few months Bandolier will be seeking to find ways Internet readers can be as supportive as those subscribing to the journal.

In this issue

Anti-TNF therapy in early rheumatoid arthritis

Anti-TNF therapy for rheumatoid arthritis has a proven high degree of effectiveness (Bandolier 99) in clinical trials and the real world (Bandolier 104). In the main all these patients were already using disease-modifying drugs, or had failed to improve on them. Two new studies [1,2] suggest that earlier treatment can be as, or more, beneficial.

In the UK NICE adopted the British Society of Rheumatology (BSR) guidelines for treatment of rheumatoid arthritis, that anti-TNF agents should be used if the following criteria were met:

- Patients satisfy ACR (American College of Rheumatology) classification for RA
- Patients have highly active RA
- Patients should have failed treatment on methotrexate and at least one other disease modifying agent
- Treated patients should be entered on a central register, with drugs, dose, outcomes and toxicity reported on a quarterly basis.

Treatment costs are presently about £8,000 a year, and there is clearly a budgetary impact involved in introducing the agents. Using current guidelines about 6% of patients with rheumatoid arthritis qualify for anti-TNF treatment (Bandolier 115).

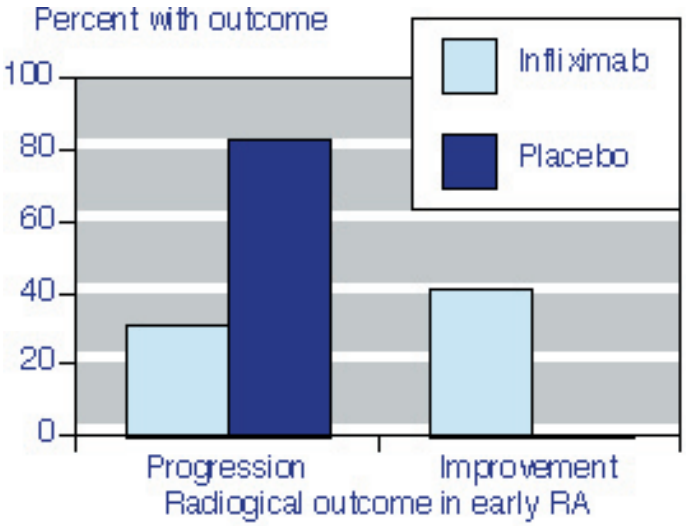
Starting anti-TNF agents earlier in the disease process was always going to be an issue, with good arguments for it. Simply put, since anti-TNF is so effective, why wait until patients have significant joint problems before ameliorating symptoms? It would be better to prevent the joint problems with an early start of anti-TNF treatments. Two studies, neither of which is a full randomised trial, add to the arguments.

Infliximab [1]

Information comes from a retrospective analysis of a large randomised trial of methotrexate alone and four schedules of infliximab (3 or 10 mg/kg every four or eight weeks) plus methotrexate for two years. The total trial size was 428, with 82 having rheumatoid arthritis for three years or less (the definition of early arthritis used).

Analysis was by original randomised allocation, and by all infliximab plus methotrexate regimens versus methotrexate alone.

Figure 1: Radiological progression or improvement of disease with infliximab or placebo in early rheumatoid arthritis



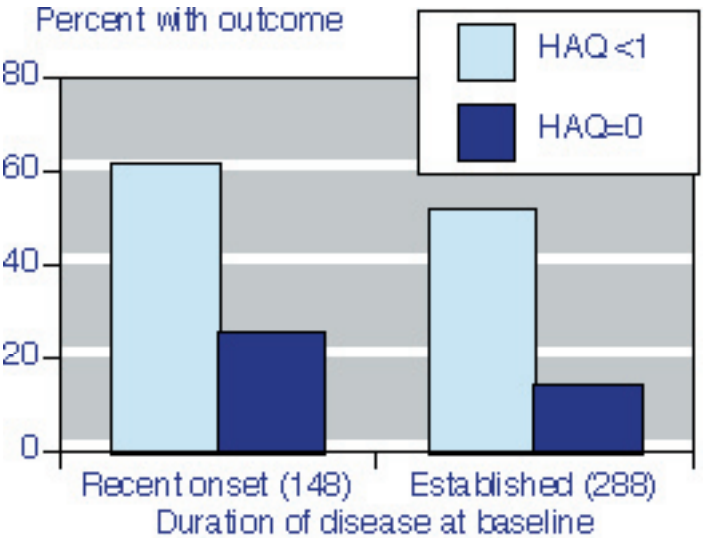
One outcome was radiological progression in hands and feet. Ten of the 12 evaluable methotrexate-only patients had radiological progression, compared with 15/49 on additional infliximab (Figure 1). This is equivalent to an NNT of about 2 for infliximab to prevent radiological progression in early arthritis over two years.

The second outcome was the proportion of patients whose erosion scores had improved using a definition of a minimum improvement, without a significant worsening in any one joint. No patient out of 12 on methotrexate alone had this degree of improvement, but 20/49 on additional infliximab did (Figure 1). This is equivalent to an NNT of about 2 for infliximab to improve erosion scores in early arthritis over two years.

Etenercept [2]

Here information comes from 207 patients in a long-term open label extension of a randomised trial in early (less than three years) rheumatoid arthritis, and 464 patients with established rheumatoid arthritis from a long term safety study who had poor response to previous disease modifying drugs, and some received etenercept for three years.

Figure 2: Percent of patients with good HAQ scores and early or established rheumatoid arthritis treated with etenercept for three years



Recent onset patients had a mean duration of disease of one year, compared with 12 years for those with established rheumatoid arthritis. Both groups had similar improvements in tender and swollen joint counts, by more than 60-70% in each case.

The main differences were in responses to the health assessment questionnaire (HAQ), incorporating dimensions of physical function, disability, and ease of daily activities using the average of 20 questions scored 0 to 3. Scores of 0 indicate no difficulty, 1 some difficulty, 2 much difficulty, and 3 unable to perform. Low scores are better.

Patients with established rheumatoid arthritis had an initial average score of over 1.6, which fell to about 1 by three years. Patients with early rheumatoid arthritis had an average starting score of 1.5, falling to about 0.7 by three years. More of the early than established rheumatoid arthritis patients had three year scores below 1, or of 0 (Figure 2).

Comment

In patients with early rheumatoid arthritis we know that etenercept is better than methotrexate in preventing radiological changes and at improving health assessment questionnaire scores [3]. Now we have strong suggestions of a similar effect with infliximab. In addition, it looks very much as if using anti-TNFs in early rheumatoid arthritis produces better results than using them when the disease has progressed.

Of course this is still a limited amount of information, but other studies in early rheumatoid arthritis are ongoing. Prediction is difficult, but it is unlikely that results of those trials will be very different from what we have now.

As Churchill said "...man will occasionally stumble over the truth, but usually manages to pick himself up, walk over or around it, and carry on." The bills for early use of anti-TNF in rheumatoid arthritis (and perhaps other conditions) will be huge. The benefits for healthcare systems and society may also be huge.

The secret will be squaring a few circles rather than walking around the truth. We need some brainy health economists to begin looking at the implications of all this.

References:

1 FC Breedveld et al. Infliximab in active early rheumatoid arthritis. Annals of the Rheumatic Diseases 2004 63: 149-155.

2 SW Baumgartner et al. Eternercept (Enbrel®) in patients with rheumatoid arthritis with recent onset versus established disease: improvement in disability. Journal of Rheumatology 2004 31: 1532-1537.

3 MC Genovese et al. Etenercept versus methotrexate in patients with early rheumatoid arthritis. Two year radiological and clinical outcomes. Arthritis & Rheumatism 2002 46: 1442-1450.

Premature ejaculation treatments reviewed

Back in 1999 Bandolier did a quick review of premature ejaculation treatments. The upshot of this was that there were a number of trials of varying quality showing that antidepressants taken every day improved the main measure of premature ejaculation, the intravaginal ejaculation latency time (IELT). Now we have a comprehensive systematic review [1] that examines all treatments in all study designs, and gives a cracking overview of the topic. What makes this important is that more specific treatments are presently being designed, and this gives us a foundation on which to make future judgements about quality and efficacy.

Systematic review

Four databases were examined, and all drug treatment reports in any language were included, whatever the design used. Combined behaviour and drug treatments were not included. Studies to be included had to report quantitative data on IELT.

Results

Between 1943 and 2003 there were 79 publications on a variety of treatments, including anaesthetic ointments, neuroleptics, antibiotics, antidepressants and miscellaneous agents. Table 1 shows the number of reports by decade, and how many of them were randomised, double blind trials in which the clinical outcome was measured at each intercourse. Overall just 44% of studies were double blind, 24% used a stopwatch or equivalent for accurate measurement of outcome (and only 15 of these were double blind), only 22% measured the outcome at each intercourse, and only 30% measured outcome in a baseline period.

Table 1: Total trials and RCTs over time

Period	Antidepressants daily		Antidepressants on demand		Anaesthetics and other agents	
	Total	RCTs	Total	RCTs	Total	RCTs
Before 1960	0	0	0	0	3	0
1961-1970	0	0	0	0	4	0
1971-1980	2	1	0	0	4	0
1981-1990	3	0	0	0	13	1
1991-2000	22	6	5	0	6	2
2000-2003	8	5	3	0	6	2
Total	35	12	8	0	36	5

The definition of what constituted premature ejaculation varied, and only 58% of the studies gave a definition. It was defined as one minute or less in 19 studies, 2 minutes or less in 11, 3 minutes or less in eight, and one study each used 30 seconds, or four and five minutes.

Only the studies on antidepressants were of sufficient quality for meta-analysis, and only eight of the 35 with daily treatment were randomised, double blind, and used prospective measurement of IELT at each intercourse. Results were combined by using the percentage increase in IELT (on-treatment IELT minus baseline IELT / baseline expressed as a percentage).

One analysis used all the available trials, while a second used only the eight best trials. The results (Figure 1) were broadly similar, except that the better quality trials tended to give more conservative estimates of effect. One note of caution, though, is that trials tended not to be large, so even the extended analysis was able to pool data from at best a hundred or so patients.

Comment

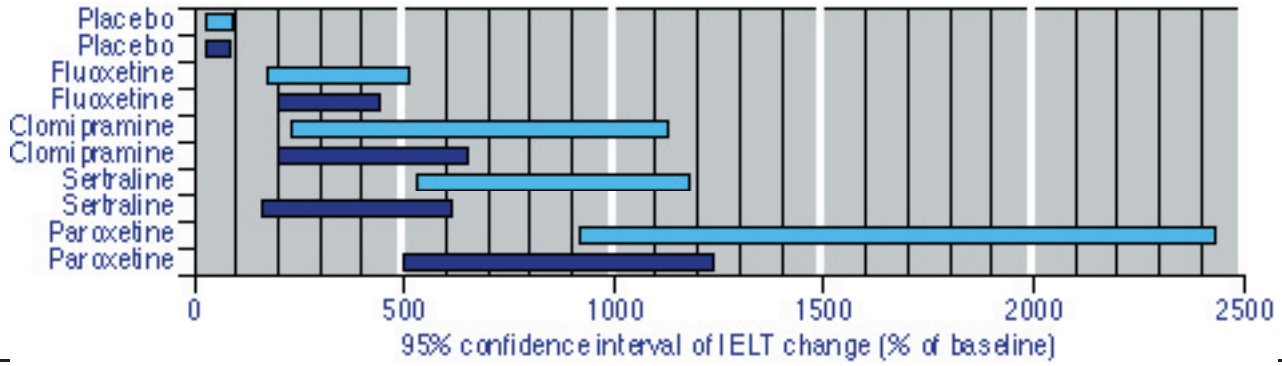
Anyone with a professional interest in premature ejaculation would find this an excellent place to start evidence-based thinking about treatments for the condition. As well as providing some results, it has a useful insight into trial methods, and how to make sure that future trials are conducted better than those in the past. Here is an opportunity to learn from our mistakes.

The analysis also confirms the Bandolier review of five years previously. Antidepressants taken daily are effective. It will be interesting to use this review to judge newly emergent therapies over the next few years.

Reference:

1 MD Waldinger et al. Relevance of methodological design for the interpretation of efficacy of drug treatment of premature ejaculation: a systematic review and meta-analysis. International Journal of Impotence Research 2004 16: 369-381.

Figure 1: Intravaginal ejaculation latency time change with different trials and drugs (light bars for all trials, dark bars for randomised, double blind trials with prospective IELT measurement)



Finding type 2 diabetics in primary care

A concern about the obesity epidemic is the increased numbers of people with adult-onset diabetes. Chance finding of frank diabetes or pre-diabetic hyperglycaemia is often a major trigger for lifestyle changes of less but better food, more exercise, and lost weight. Early detection and better control could ameliorate problems associated with diabetes.

This smacks of screening. Screening is a word fraught with danger, because in any set of circumstances there are three camps: the small numbers of enthusiasts who are either for it or against it, and the great mass of normal professionals whose main reaction is profound cynicism about another target. A study that shows that real-world targeted screening can work and might make sense [1] is a welcome relief.

Study

The study was conducted in 16 practices in Somerset and Devon, randomly selected from 42 volunteer practices. They had to have over 3,500 patients and have good (>60%) recording of BMI. Each practice was asked to sample 100 patients, 25 from each of four groups with different entry criteria (Table 1) relating to age and BMI. Selection of patients within the practices was done randomly. Patients could be selected for more than one group. Those with previously diagnosed diabetes were excluded, and only Caucasians were screened.

Trained practice nurses ran the screening clinics. Patients were sent a provisional clinic appointment, followed up by telephone reminder. Weight, height and age were recorded, and a fasting venous blood sample taken for plasma glucose measurement. Those with fasting plasma glucose over 6 mmol/L were invited for repeat testing. Diabetes was defined as plasma glucose of 7 mmol/L or more on both occasions. Impaired fasting glycaemia was defined as levels of 6.1-6.9 mmol/L on both tests.

Results

The response rate to invitation to attend the screening clinic was 61%. That meant 1,287 people attended, and, as some were in more than one group, there were 1,644 data points for analysis. BMI information was available for 77% of the over-50 population, and 20% of these were out of date or inaccurate compared with clinic measured BMI. Self-reported age differed from practice computer in 27/1,287 cases by more than one year. Of the 1,287 who attended for screening:

199 (15%) had an abnormal first test
All of these attended a second time
148 (12%) had an abnormal second test
55 (4.3%) had type 2 diabetes
93 (7.2%) had impaired fasting glycaemia

The numbers of patients needed to be screened to detect one case of type 2 diabetes or impaired fasting glycaemia was low (7-13, Table 1), and reasonably flat across the groups.

Comment

These screening strategies discovered substantial numbers of people with previously undiagnosed type 2 diabetes. Undiagnosed diabetes rates were about 20% of those already diagnosed. For those with impaired fasting glycaemia, a glucose tolerance test might have been appropriate. Better recording of BMI and an expert computer system (they do exist!) could identify people at risk relatively simply. Practices could choose what criteria they might wish to adopt based on perceived workload, and on resources available. Lower age and BMI criteria should identify people early enough for lifestyle changes to be effective, especially in those with impaired glycaemia.

Reference:
1 CJ Greaves et al. A simple pragmatic system for detecting new cases of type 2 diabetes and impaired fasting glycaemia in primary care. Family Practice 2004 21: 57-62.

Table 1: Screening group characteristics and results of screening

	Screening group			
Criterion	**1**	**2**	**3**	**4**
Characteristics of groups				
Age (years)	over 70	over 65	over 60	over 50
BMI (kg/sq m)	over 32	over 30	over 28	over 26
Percentage of population in each group	0.6	1.8	4.2	11.1
Number of people tested	301	489	471	383
Percent with established type 2 diabetes in each group	28	23	17	11
Results of screening				
Number (%) with new type 2 diabetes	14 (4.7)	28 (5.7)	18 (3.8)	10 (2.6)
Number (%) with new impaired fasting glycaemia	25 (8.3)	41 (8.4)	39 (8.3)	20 (5.2)
Number needed to test for type 2 diabetes	22	18	20	38
Number needed to test for type 2 diabetes or impaired fasting glycaemia	8	7	8	13

Management of high-risk heart failure

Disease management programmes for the care of patients with heart failure that involve specialised follow-up by a multidisciplinary team reduce hospital admission and are probably cost saving. This is the finding of an updated systematic review [1] that examined all the relevant randomised trials. It found benefits in mortality, all cause and heart failure-related hospital admissions, and is probably cost effective.

Systematic review

Six electronic databases were searched for randomised trials of management programmes in heart failure, as well as bibliographies. For inclusion trials had to report on the impact of outpatient-based multidisciplinary management strategies on mortality or hospital admission rates in patients with heart failure.

Three groups of treatment were defined:

1 Multidisciplinary heart failure clinic, or a multidisciplinary team providing specialised follow-up but not in a hospital or practice clinic.
2 Telephone follow-up and enhanced communication with primary care physician.
3 Educational programmes designed to enhance patient self care activities.

Outcomes were mortality, patients with at least one hospital admission for any reason or for heart failure, and the total number of hospital admissions for any cause or for heart failure (to include multiple admissions).

Results

Twenty-nine randomised trials were identified, reporting at least one outcome of interest. In all of them the control was usual care, which was not well defined. Average age of patients in the trials was usually over 70 years, and follow up was between three and 30 months, though most were of 6-12 months duration.

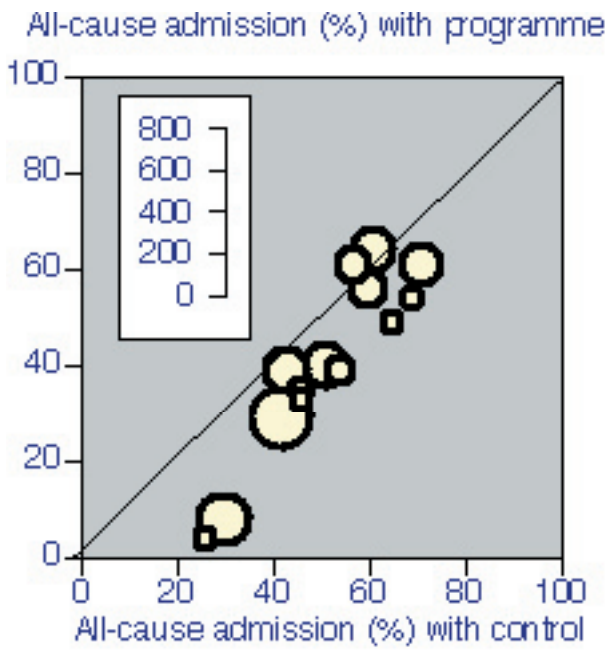
Results for the three main outcomes of all-cause mortality, all-cause hospital admission, and heart failure admission, are shown in Table 1. Because some trials were small, and others of short duration, a sensitivity analysis includes trials with at least 100 patients, and trials of at least six and 12 month duration, though only 12 month data are shown in Table 1. Though relative risks were similar for all of these, longer duration trials had higher event rates, and so lower (better) NNTs.

Multidisciplinary clinics or teams contributed the largest amount of evidence and had evidence for the largest effect (Table 1). For every 100 patients with heart failure in such a multidisciplinary team instead of a usual control for 6-12 months, 10 would avoid at least one admission to hospital, and at least five would avoid dying.

Table 1: All-cause mortality, all-cause and heart failure admission results

Outcome and trials	Number of		Event rate (%) with		Relative risk (95% CI)	NNT (95% CI)
	Trials	Patients	Intervention	Contol		
All-cause mortality						
All trials	23	3781	15	18	0.8 (0.7 to 0.9)	30 (18 to 107)
All trials of at least 12 months	9	1236	21	29	0.7 (0.6 to 0.9)	13 (9 to 37)
Multidisciplinary clinics/teams	12	2129	17	24	0.7 (0.6 to 0.9)	17 (11 to 38)
Telephone follow up	7	1193	10	11	0.9 (0.7 to 1.3)	not calculated
Enhanced self care	3	459	17	14	1.2 (0.8 to 1.8)	not calculated
All-cause admission						
All trials	23	4313	40	47	0.9 (0.8 to 0.93)	16 (11 to 30)
All trials of at least 12 months	7	1120	45	55	0.8 (0.7 to 0.9)	10 (6 to 22)
Multidisciplinary clinics/teams	14	2273	41	51	0.8 (0.7 to 0.9)	10 (7 to 16)
Telephone follow up	6	1581	42	42	1.0 (0.9 to 1.2)	not calculated
Enhanced self care	3	459	31	42	0.7 (0.6 to 0.9)	9 (5 to 38)
Heart failure admission						
All trials	19	3008	25	34	0.7 (0.6 to 0.8)	11 (8 to 16)
All trials of at least 12 months	6	785	30	46	0.7 (0.6 to 0.8)	6 (5 to 11)
Multidisciplinary clinics/teams	9	1416	27	38	0.7 (0.6 to 0.8)	9 (6 to 17)
Telephone follow up	6	1024	20	27	0.8 (0.6 to 0.95)	15 (8 to 59)
Enhanced self care	4	568	27	40	0.7 (0.5 to 0.9)	8 (5 to 19)

Figure 1: All-cause hospital admission with multidisciplinary programmes versus control



Over the wide range of event rates seen for hospital admission in just the trials on multidisciplinary interventions, there appeared to be a larger effect at lower event rates (Figure 1). This might imply that very severe cases of heart failure present much more difficult challenges, even for these overall effective teams. Telephone follow up and enhanced self care were represented in fewer trials. Telephone follow up was not effective in reducing hospital admission or mortality, and appeared to be the least favoured option.

Other outcomes were reported. The total number of hospital admissions and total heart failure admissions was reduced by all three strategies, and total heart failure admissions were reduced by 43%. Adherence rates to medicines was higher in the intervention programmes, nine of 18 studies reported better quality of life with the programmes, and 15 of 18 trials reporting costs of interventions concluded that the interventions were cost effective.

Comment

This is a welcome update of a previous review [2], incorporating 18 new trials. The direction of the results has not changed, but more evidence means we can be even more confident that outpatient-based multidisciplinary heart failure management programmes are effective and cost effective. This review confirms that care pathways based on good evidence can deliver better care to patients at lower cost.

References:
1 FA McAlister et al. Multidisciplinary strategies for the management of heart failure patients at high risk for admission. Journal of the American College of Cardiology 2004 44: 810-819.
2 FA McAlister et al. A systematic review of randomized trials of disease management programs in heart failure. American Journal of Medicine 2001 110:

Understanding risk

Understanding risk is hard enough even for those of us who are numerate, literate, and deal with these issues on a daily basis. Rafts of issues complicate informing patients about the risk of side effects of their medicines, predominantly that of how to present information about benefit and harm. Making a sensible, informed, choice is not easy. A study from Leeds shows how presentation of adverse event information can have huge effects on perceived risk by patients [1].

Study

The setting was 120 adult patients attending a cardiac rehabilitation clinic after bypass surgery or myocardial infarction, and taking simvastatin or atorvastatin. The only exclusions were inability to read or where first language was not English.

There were two variables. Two different adverse events of statins were chosen, constipation and pancreatitis, and the adverse event information was presented using words or numbers (Box), using EU guidelines (Table 1). Half of the participants received information about constipation, and the other half information about pancreatitis (atorvastatin users only). Within each group, half received the information using words, and half using numbers. Allocation was random.

After reading the information, participants were asked to give the percentage probability likelihood of having the adverse event, and were able to refer to the information sheet they had been given. They also completed a sheet with six questions about attitudes and how the adverse event might affect them.

Results

The age range of participants was 35 to 74 years (median 63), and they had been taking a statin for one to 70 months (median six). The majority (56%) had no formal educational qualifications.

Presentation

Words

.....statin is associated with some side effects. It can cause constipation. This is a common side effect of the medicine.
or
.....statin is associated with some side effects. It can cause pancreatitis. This is a rare side effect of the medicine.

Numbers

.....statin is associated with some side effects. It can cause constipation. This side effect occurs in 2.5% (that is, 4 in 100) people who take the medicine.
or
.....statin is associated with some side effects. It can cause pancreatitis. This side effect occurs in 0.04% (that is, 4 in 10,000) people who take the medicine.

Table 1: EU verbal descriptors of harm

EU verbal descriptors of side effect probability		
Verbal	**Frequency**	**Probability**
Very common	over 10%	more than 1 in 10
Common	1-10%	1 in 100 to 1 in 10
Uncommon	0.1-1%	1 in 1,000 to 1 in 100
Rare	0.01-0.1%	1 in 10,000 to 1 in 1,000

For both constipation and pancreatitis, participants overestimated the percentage chance of the adverse event affecting them (Figure 1). The degree of overestimation was far higher using words than using numbers. Using words rather than numbers also increased patient estimates of the event happening to them using a six point scale, with small differences in some other questions, and satisfaction with information presented was somewhat higher with numbers than with words.

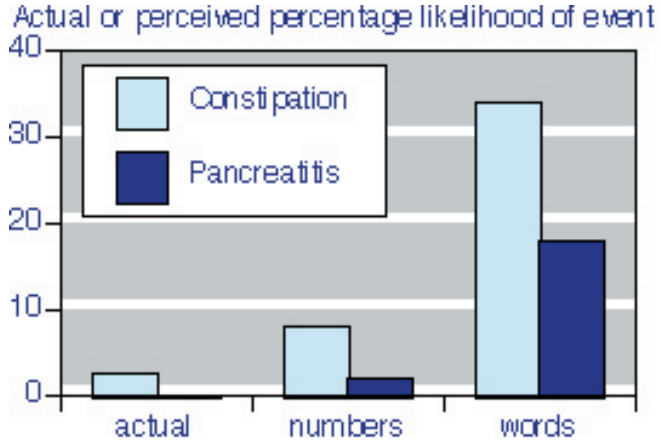
Comment

Clearly we are a long way from being able to convey information about risk in a standardised way that people will understand correctly. Words look to be less useful than numbers, but numbers themselves are hardly conveying the right message, especially for rare events.

The other variable is the level of education in the population. In this sample only 30% had qualifications gained in the UK at age 16 or so (O level), and only 13% had qualifications gained at 18 years or older (A level or better). We do know, though, that women overestimated the risks and underestimate the effectiveness of hormonal contraceptives, irrespective of educational attainment [2].

References:
1 P Knapp et al. Comparison of two methods of presenting risk information to patients about the side effects of medicines. Qual Saf Health Care 2004 13: 176-180.
2 JE Edwards et al. Womens' knowledge and attitudes to contraceptive effectiveness and adverse health effects. British Journal of Family Planning 2000 26: 73-80.

Figure 1: What patients thought versus actual risk



Melanoma and congenital melanocytic nevi

Large congenital melanocytic nevi in children are thought to be associated with increased risk of malignant melanoma. Both risk and aesthetic considerations support surgical removal and reconstruction. A systematic review [1] estimates the size of the risk.

Systematic review

The review used two electronic databases to identify English language papers related to large melanocytic nevi in humans up to 2002, and searched other bibliographies. A wide range of descriptions for nevi was used to ensure that all studies were captured. For inclusion studies needed an explicit definition for large congenital melanocytic nevi, and to enrol patients without melanoma. Any that used a definition of greater than 2% of body surface area, or which used nevi more than 20 cm at largest diameter or expected to reach this size were included. The smallest allowable sample was five patients.

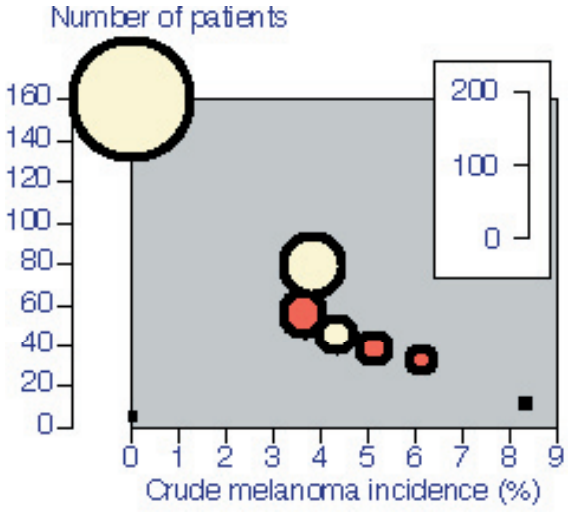
Results

Eight cohorts were included, with 432 children (Figure 1). The mean age at entry (when given) was two weeks to 8.4 years, and mean follow up of between 0.7 and 10.5 years. Five studies were prospective and three retrospective. There were more female (57%) than male (43%) children.

Twelve children (2.8%) developed cutaneous malignant melanoma. This incidence was calculated as 2,600 times higher than a similar age group in the general population. In the ten cases where the information was available, the melanoma originated in the large congenital melanocytic nevus.

Of the 432 children, 31 (7%) underwent complete excision, 98 (23%) partial excision, 70 (16%) complete or partial exci-

Figure 1: Studies of prevalence of malignant melanoma in congenital melanocytic nevi (dark circles were retrospective studies)



sion, 21 (5%) dermabrasion, 17 (4%) chemical peel, and 194 (45%) were observed.

Comment

Making a decision about treating a child with a large congenital melanocytic lesion is difficult. On the one hand complete excision is not always possible, and if it is possible it can be difficult, with poor cosmetic results. On the other hand the risk of malignant melanoma was thought to be high. This study tells us that melanoma occurs about 3,000 times more frequently in these children than in children without these nevi, and that over an average of about six years one child in 36 will develop malignant melanoma.

Many imponderables remain. This thoughtful systematic review not only gives a useful start, but provides guidance about information to be collected and reported in future.

Reference:
1 AJ Watt et al. Risk of melanoma arising in large congenital melanocytic nevi: systematic review. Plastic and Reconstructive Surgery 2004 113: 1968-1974.

Rationing critical care beds

Limited availability of healthcare resource in the face of permanent or temporary excess demand leads inevitably to rationing. Hardly news, that, though the R word is perhaps the hardest to use. Given that rationing is a fact of life, it behoves us to have some idea of the consequences. A systematic review of rationing of critical care beds [1] tells us that more people die who might have lived.

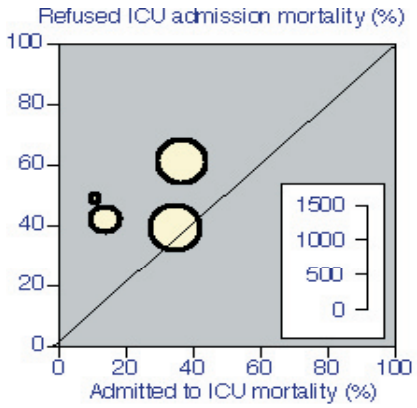
Systematic review

A widespread literature search without language restriction used many databases, plus handsearching of abstracts, plus contacting authors and experts. Inclusion criteria were adult patients who were seriously ill and considered for admission to an intensive care unit, retrospective or prospective cohort study, rationing based on reduced bed availability or triaging of patients referred for admission, and with outcomes including severity of illness, length of stay, or mortality. Medical, surgical, trauma, neurological or mixed intensive care units, intermediary care units, or step-down units were allowed.

Excluded were cost effectiveness studies, evaluation of protocols to make triaging decisions or rationing or triaging studies of coronary care units. Three different types of study were recognised:

1 Triaging studies comparing patients admitted to an ICU and those refused a bed in ICU.
2 Rationing bed studies comparing patients admitted during at least two different periods of time, one of which had reduced bed availability.
3 Single cohort studies of patients either admitted or refused admission during a single period of bed shortage.

Figure 1: Mortality by ICU bed admission



Results

Ten studies were available. Five were triaging studies, three were rationing studies, and two single cohort studies. There were considerable differences in the studies, though most reported patient outcomes and nine had follow-up rates above 90%.

The most useful information came from the triaging studies, four of which reported mortality rates for 1,220 patients admitted and 558 not admitted to an intensive care bed (Figure 1). In each of these four studies mortality was higher in patients refused admission to an intensive care bed. These studies were performed in Israel (2), Hong Kong, UK and USA.

Overall mortality was 29% (357/1,220) in those admitted to ICU, compared with 50% (280/558) in those refused an intensive care bed (relative risk 1.7; 95% confidence interval 1.5 to 1.9). For every five patients refused an intensive care bed, one more died (95% CI 4 to 6) than would have been the case if they had been admitted to intensive care.

Comment

This is a headline result from some quite complex data, though any results other than this headline should probably not have much weight because they mostly come from single studies. But this remains an important heads up for those responsible for provision of healthcare and use of resources. Rationing comes with the price, for intensive care beds, of more deaths in those refused admission. Clearly a topic that demands more research, especially because saving money might mean spending it elsewhere in the system.

Reference:
1 T Sinuff et al. Rationing critical care beds: a systematic review. Critical Care Medicine 2004 32: 1588-1597.

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